

REMARKS

Applicant thanks the Examiner for the thorough consideration given the present application. Claims 1, 4, and 6-13 are currently being prosecuted. The Examiner is respectfully requested to reconsider his rejections in view of the amendments and remarks as set forth below.

Entry of Amendment

At the outset, it is respectfully requested that the present amendment should be entered in view of the fact that the amendments to the claims automatically place the application in condition for allowance. Alternatively, if the Examiner does not agree that the application is in condition for allowance, he is respectfully requested to enter the amendment for the purpose of appeal. The amendments are designed to overcome 35 U.S.C. § 112 problems in the claims and accordingly the entry of the amendment reduces the issues on appeal.

Drawings

It is gratefully acknowledge that the Examiner has approved the proposed drawings corrected filed November 4, 2002. Applicant is providing corrected drawings with the present amendment.

Objection To The Claims

The Examiner objected to claims 1 and 3-7 due to informalities in claim 1. By way of the present Amendment, these two errors have been removed. Accordingly, this objection is overcome.

Rejection Under 35 U.S.C. § 112, first paragraph

Claims 1, 3 and 5-8 stand rejected under 35 U.S.C. § 112, first paragraph as containing subject matter not described in the specification. This rejection is respectfully traversed.

First, claims 3 and 5 have been cancelled, rendering this part of the rejection moot.

In regard to claims 6 and 7, the Examiner correctly points out that the correct angle should be $\theta 5$ rather than $\theta 6$. By way of the present Amendment, Applicant has corrected this error. Accordingly, this part of the rejection is overcome.

Concerning claim 1 and claim 8, $\theta 6$ has now been described as one of the inclination angles which are gradually decreased. Accordingly, this defines $\theta 6$ as being less than $\theta 4$. Applicants submit that this now overcomes the rejection suggested by the Examiner.

Rejection Under 35 U.S.C. § 103

Claims 1 and 3-8 stand rejected as being obvious over European Patent Application 0 943 464 in view of Tsuda (U.S. Patent No. 4,962,801). This rejection is respectfully traversed.

The Examiner relies on the European reference, which is the earlier work of the present inventor, to show the basic tire tread arrangement. The Examiner admits that this reference does not show several features of claim 1. First, the reference does not show that the inclination angles θ_1 - θ_4 of the first to fourth grooves are different. Also, the limitation of angle of θ_0 being 40-60 degrees is also not shown in this reference. Also, the limitation that angle θ_5 is 70-100 degrees is different than the teaching in the reference of an angle having 80-110 degrees .

The Examiner relies on the Tsuda reference to show a teaching of these differences. The Tsuda reference shows auxiliary slant grooves having different angles. The reference does not give a range of the size of these angles. However, the examples listed on column 4, lines 24, 44 and 45 all fall in the range of 10-20 degrees.

Applicant submits that claim 1 is not obvious over this combination of references. Applicant submits that there are a number of differences between the claimed invention and the description provided in the two references and that the presently claimed invention would not be obvious over the combination of these two references.

Concerning the size of angle θ_0 , the Examiner states that it would have been obvious to have an angle of 40-60 degrees in view of the teaching in the European reference of having an angle of 60-80 degrees and also in view of the teaching of Tsuda that the angle θ_a is 30-75 degrees. First, in regard to the Tsuda reference, the angle θ_a is the angle between the center of the main slant groove and the equator of the tire. If the main slant groove was a straight line, this angle would be equal to the angle that the groove forms with the circumferential direction. However, in this reference the main slant groove is

curved so that the angle between the center line of the groove and the tire's circumferential direction is different than the angle at the tire equator. As seen in Fig. 1 of the reference, the groove becomes flatter, and thus closer to perpendicular to the circumferential direction. Column 3, line 68 says that the angle θ_a can be 30-75 degrees and more particularly 45-65 degrees. However, since the angle at the edge of the tread is larger, the range of angles does not apply. In fact, in Fig. 1, it would appear that a figure in line with the 60-80 degree range of the European reference is probably closer to that shown in Tsuda. Thus, Applicant submits that the Tsuda reference does not aid the European reference as showing a smaller range of angles. Applicant furthermore submits that it would not be obvious to change the range of angles in the European patent, since had this been obvious, the present inventor who is the inventor of the present invention would have seen it at the time.

The Examiner has stated that it would have been obvious to use the teaching of Tsuda of having different angles for θ_1 , θ_2 , θ_3 , θ_4 . First, it is noted that the claim states that the range of angles is 20-50 degrees. The European reference shows this range to be 15-45 degrees. The Tsuda reference does not describe the range of angles and the two examples list angles between 10 and 20 degrees. Thus, although it teaches the concept of having different angles, these specific angle ranges are so different from those of the European reference, it is not believed to be obvious to combine the two.

Furthermore, the Examiner has not indicated any motivation why one skilled in the art would want to use the teachings of Tsuda in the European reference. Changing the angles in a tire tread arrangement would likely change many characteristics of the tire and

accordingly it would not be obvious even after viewing Tsuda to make these changes since other undesirable changes may also occur. Furthermore, it is noted that while Tsuda shows such a difference in incline angles, this is in conjunction with a main slant groove which is curved rather than straight. Using such an arrangement of different auxiliary slant grooves would produce a different effect with a straight main groove rather than a curved one. Accordingly, Applicant submits that the combination would not be obvious since there is no motivation and because of the differences between the two references.

In addition, claim 1 has now been amended to further point out that the inclination angles are gradually decreased from the outside tread edge to the inside tread edge and that the angle difference of the adjoining angles is not less than 5 degrees. The Tsuda reference does not describe the size of these angle differences. However, in the example described in column 4, line 24, the difference between the two listed angles is 5 degrees. In the example of column 4, lines 44 and 45, the difference is 4 degrees. Accordingly, this reference does not teach an arrangement where the angle difference is not less than 5 degrees since neither of these examples has an angle which falls into this range. For this additional reason, Applicant submits that claim 1 is likewise allowable.

In regard to claim 8, many of the limitations of claim 1 are also found in this claim. Accordingly, the arguments presented above likewise apply to this claim. Claim 8 also now includes the limitations that the inclination angles gradually decrease from the outside tread edge to the inside tread edge. Accordingly, this claim is likewise considered to be allowable.

Claims 4, 6, 7, and 9-13 depend from these allowable claims and as such are also considered to be allowable. In addition, these claims include additional limitations which further define the invention. Thus, claim 4 further describes a relationship between $\theta 4$ and $\theta 6$. Claims 6 and 7 describe the size of $\theta 5$. Claim 9 describes the inclination of the outside lateral grooves. Claims 10-13 describe the kind of lines formed by the various grooves. Accordingly, these claims are considered to be additionally allowable.

Conclusion

In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied by the Examiner, either alone or in combination. In view of this, reconsideration of rejections and allowance of all the claims are respectfully requested.

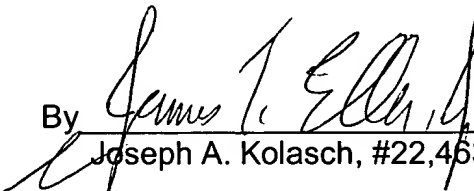
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert F. Gnuse (Reg. No. 27,295) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant respectfully petitions for a three (3) month extension of time for filing a response in connection with the present application and the required fee of \$930 is being filed concurrently herewith.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Corrected Figure 4